

**WHAT IS CLAIMED IS:**

1. In an asynchronous digital subscriber line (ADSL) system comprising a central office ADSL Terminating Unit (ATU-C) in bi-directional overlap spectrum discrete multitone (DMT) communication with a remote ADSL Terminating Unit (ATU-R), a method comprising:  
5 transmitting a first handshake tone at either a first DMT tone or a second DMT tone based at least in part on a distance between the ATU-C and ATU-R.
2. The method as in Claim 1, wherein:  
the first handshake tone is transmitted at the first DMT tone when the distance between  
10 the ATU-C and ATU-R is less than 6.2 kilometers; and  
the first handshake tone is transmitted at the second DMT tone when the distance between the ATU-C and ATU-R is greater than or equal to 6.2 kilometers.
3. The method as in Claim 1, wherein the first handshake tone is a Pilot tone.  
15
4. The method as in Claim 3, wherein the first DMT tone is tone 64 and the second DMT tone is tone 32.
5. The method as in Claim 1, wherein the first handshake tone is a TCM-ISDN Timing  
20 Reference (TTR) tone.
6. The method as in Claim 5, wherein the first DMT tone is tone 48 and the second DMT tone is tone 24.
- 25 7. The method as in Claim 1, further comprising the step of transmitting a second handshake tone at either a third DMT tone or a fourth DMT tone based at least in part on the distance between the ATU-C and ATU-R.
8. The method as in Claim 7, wherein:

the second handshake tone is transmitted at the third DMT tone when the distance  
between the ATU-C and ATU-R is less than 6.2 kilometers; and  
the second handshake tone is transmitted at the fourth DMT tone when the distance  
between the ATU-C and ATU-R is greater than or equal to 6.2 kilometers.

5

9. The method as in Claim 7, wherein the first handshake tone is a Pilot tone and the second  
handshake tone is a TCM-ISDN Timing Reference (TTR) tone.

10

10. The method as in Claim 9, wherein the first DMT tone is tone 64, the second DMT tone is  
tone 32, the third DMT tone is tone 48 and the fourth DMT tone is tone 24.

11. The method as in Claim 1, wherein the ATU-C and the ATU-R are in bidirectional  
communication via a TCM-ISDN network.

15

12. An asynchronous digital subscriber line (ADSL) system comprising:

a central office ADSL Terminating Unit (ATU-C);

a remote ADSL Terminating Unit (ATU-R) in bi-directional overlap spectrum discrete  
multitone (DMT) communication with the ATU-C;

20

wherein the ATU-C is adapted to transmit a first handshake tone at either a first DMT  
tone or a second DMT tone based at least in part on a distance between the ATU-  
C and ATU-R; and

wherein the ATU-R is adapted to receive the first handshake tone at either the first DMT  
tone or the second DMT tone.

25

13. The ADSL system as in Claim 12, wherein the ATU-C is adapted to:

transmit the first handshake tone at the first DMT tone when the distance between the  
ATU-C and ATU-R is less than 6.2 kilometers; and

transmit the first handshake tone at the second DMT tone when the distance between the  
ATU-C and ATU-R is greater than or equal to 6.2 kilometers.

30

14. The ADSL system as in Claim 12, wherein the first handshake tone is a Pilot tone.
15. The ADSL system as in Claim 14, wherein the first DMT tone is tone 64 and the second DMT tone is tone 32.
- 5 16. The method as in Claim 12, wherein the first handshake tone is a TCM-ISDN Timing Reference (TTR) tone.
- 10 17. The ADSL system as in Claim 16, wherein the first DMT tone is tone 48 and the second DMT tone is tone 24.
- 15 18. The ADSL system as in Claim 12, wherein:  
the ATU-C is further adapted to transmit a second handshake tone at either a third DMT tone or a fourth DMT tone based at least in part on the distance between the ATU-C and ATU-R ; and  
the ATU-R is further adapted to receive the second handshake tone at either the third DMT tone or the fourth DMT tone .
- 20 19. The ADSL system as in Claim 18, wherein the ATU-C is adapted to:  
transmit the second handshake tone at the third DMT tone when the distance between the ATU-C and ATU-R is less than 6.2 kilometers; and  
transmit the second handshake tone at the fourth DMT tone when the distance between the ATU-C and ATU-R is greater than or equal to 6.2 kilometers.
- 25 20. The ADSL system as in Claim 19, wherein the first handshake tone is a Pilot tone and the second handshake tone is a TCM-ISDN Timing Reference (TTR) tone..
- 30 21. The ADSL system as in Claim 20, wherein the first DMT tone is tone 64, the second DMT tone is tone 32, the third DMT tone is tone 48 and the fourth DMT tone is tone 24.

22. The ADSL system as in Claim 12, wherein the ATU-C and the ATU-R are in bidirectional communication via a TCM-ISDN network.